



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

To: Interested Parties

Date: May 20, 2014

From: Matthew Stuckey, Chief
Permits Branch
Office of Air Quality

Source Name: Directors Crematory, LLC

Permit Level: Exemption

Permit Number: 141-34541-00588

Source Location: 1830 Kemble Avenue, South Bend, Indiana

Type of Action Taken: Changes that are administrative in nature

Notice of Decision: Approval

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the matter referenced above. Pursuant to 326 IAC 2, this approval was effective immediately upon submittal of the application.

The final decision is available on the IDEM website at: <http://www.in.gov/apps/idem/caats/>
To view the document, select Search option 3, then enter permit 34541.

If you would like to request a paper copy of the permit document, please contact IDEM's central file room:

Indiana Government Center North, Room 1201
100 North Senate Avenue, MC 50-07
Indianapolis, IN 46204
Phone: 1-800-451-6027 (ext. 4-0965)
Fax (317) 232-8659

(continues on next page)

If you wish to challenge this decision, IC 4-21.5-3-7 requires that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Suite N 501E, Indianapolis, IN 46204, **within eighteen (18) calendar days from the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

Patrick Nowak
Directors Crematory, LLC
1830 Kemble Avenue
South Bend, IN 46613

May 20, 2014

Re: Exempt Construction and Operation Status,
E141-34541-00588

Dear Mr. Nowak:

The application from Directors Crematory, LLC, received on May 14, 2014, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following stationary crematory for human remains and stationary crematory for pet remains located at 1731 South Franklin Street, South Bend, Indiana is classified as exempt from air pollution permit requirements:

The source consists of the following emission units:

- (a) One (1) human crematory, identified as 00147-H-13, with a maximum operating capacity of 150 pounds per hour (lbs/hr), using natural gas as a supplemental fuel at a maximum heat input capacity of 3.0 million Btu per hour (MMBtu/hr), using no control, and exhausting to stack 00147-H-13;
- (b) One (1) pet crematory, identified as 00150-P-13, with a maximum operating capacity of 100 pounds per hour (lbs/hr), using natural gas as a supplemental fuel at a maximum heat input capacity of 3.0 million Btu per hour (MMBtu/hr), using no control, and exhausting to stack 00150-P-13; and
- (c) Paved roads and parking lots. [326 IAC 6-4]

The following conditions shall be applicable:

1. Pursuant to 326 IAC 4-2-2 (Incinerators), the Permittee shall comply with the following:
 - (a) All incinerators shall comply with the following requirements:
 - (1) Consist of primary and secondary chambers or the equivalent.
 - (2) Be equipped with a primary burner unless burning only wood products.
 - (3) Comply with 326 IAC 5-1 (Opacity Limitations) and 326 IAC 2 (Permit Review Rules).
 - (4) Be maintained, operated, and burn waste in accordance with the manufacturer's specifications or an operation and maintenance plan as specified in subsection (c).
 - (5) Not emit particulate matter in excess of one (1) of the following:



A State that Works

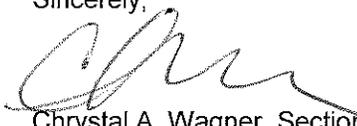
- (A) Three-tenths (0.3) pound of particulate matter per one thousand (1,000) pounds of dry exhaust gas under standard conditions corrected to fifty percent (50%) excess air for incinerators with a maximum solid waste capacity of greater than or equal to two hundred (200) pounds per hour.
 - (B) Five-tenths (0.5) pound of particulate matter per one thousand (1,000) pounds of dry exhaust gas under standard conditions corrected to fifty percent (50%) excess air for incinerators with solid waste capacity less than two hundred (200) pounds per hour.
 - (6) If any of the requirements of subdivisions (1) through (5) are not met, then the owner or operator shall stop charging the incinerator until adjustments are made that address the underlying cause of the deviation.
- (b) An incinerator is exempt from subsection (a)(5) if subject to a more stringent particulate matter emission limit in 40 CFR 52 Subpart P, State Implementation Plan for Indiana.
 - (c) An owner or operator developing an operation and maintenance plan pursuant to subsection (a)(4) must comply with the following:
 - (1) The operation and maintenance plan must be designed to meet the particulate matter emission limitation specified in subsection (a)(5) and include the following:
 - (A) Procedures for receiving, handling, and charging waste.
 - (B) Procedures for incinerator startup and shutdown.
 - (C) Procedures for responding to a malfunction.
 - (D) Procedures for maintaining proper combustion air supply levels.
 - (E) Procedures for operating the incinerator and associated air pollution control systems.
 - (F) Procedures for handling ash.
 - (G) A list of wastes that can be burned in the incinerator.
 - (2) Each incinerator operator shall review the plan before initial implementation of the operation and maintenance plan and annually thereafter.
 - (3) The operation and maintenance plan must be readily accessible to incinerator operators.
 - (4) The owner or operator of the incinerator shall notify the department, in writing, thirty (30) days after the operation and maintenance plan is initially developed pursuant to this section.
 - (d) The owner or operator of the incinerator must make the manufacturer's specifications or the operation and maintenance plan available to the department upon request.
2. Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:
- (a) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined by 326 IAC 5-1-4.

- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.
3. Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions, Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate IAC 6-4.
4. Pursuant to 40 CFR 60.2555(a)(1) and 60.2555(a)(2), in order to demonstrate that each of the crematory incinerators is not subject to the requirements of the New Source Performance Standard (NSPS) for Commercial and Industrial Solid Waste Incinerations Units for Which Construction is Commenced After November 30, 1999 or for Which Modification or Reconstruction is Commenced on or After June 1, 2001, 40 CFR 60, Subpart CCCC (326 IAC 12), the Permittee shall comply with the following:
- (a) The Permittee shall notify the IDEM, OAQ Administrator that each crematory incinerator burns 90 percent or more by weight (on a calendar quarter basis and excluding the weight of auxiliary fuel and combustion air) of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste. The Permittee shall submit the notification to:
- Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251
- (b) The Permittee shall maintain records on a calendar quarter basis of the weight of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste burned, and the weight of all other fuels and wastes burned in the unit.
- (c) Pursuant to 40 CFR 60.2875, pathological waste is defined as waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).
- (d) All records shall be retained for a period of at least five (5) years from the date of the measurement. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

A copy of the Exemption is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>. For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.idem.in.gov

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source. If you have any questions on this matter, please contact Donald McQuigg, OAQ, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana, 46204-2251, at 317-234-4240 or at 1-800-451-6027 (ext 4-4240).

Sincerely,



Chrystal A. Wagner, Section Chief
Permits Branch
Office of Air Quality

CAW/dwm

cc: File - St. Joseph County
St. Joseph County Health Department
Compliance and Enforcement Branch
Billing, Licensing and Training Section

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for an Exemption

Source Description and Location

Source Name: Directors Crematory, LLC
Source Location: 1731 South Franklin Street, South Bend, IN 46613
County: St. Joseph
SIC Code: 7261
Exemption No.: E141-34541-00588
Permit Reviewer: Donald McQuigg

On May 14, 2014, the Office of Air Quality (OAQ) received an application from Directors Crematory, LLC. related to the construction and operation of one (1) stationary human crematory incinerator and one (1) stationary pet crematory incinerator.

Existing Approvals

There have been no previous approvals issued to this source.

County Attainment Status

The source is located in St. Joseph County.

Pollutant	Designation
SO ₂	Better than national standards.
CO	Unclassifiable or attainment effective November 15, 1990.
O ₃	Unclassifiable or attainment effective July 20, 2012, for the 2008 8-hour ozone standard. ¹
PM _{2.5}	Unclassifiable or attainment effective April 5, 2005, for the annual PM _{2.5} standard.
PM _{2.5}	Unclassifiable or attainment effective December 13, 2009, for the 24-hour PM _{2.5} standard.
PM ₁₀	Unclassifiable effective November 15, 1990.
NO ₂	Cannot be classified or better than national standards.
Pb	Unclassifiable or attainment effective December 31, 2011.

¹Attainment effective October 18, 2000, for the 1-hour ozone standard for the South Bend-Elkhart area, including St. Joseph County, and is a maintenance area for the 1-hour ozone National Ambient Air Quality Standards (NAAQS) for purposes of 40 CFR 51, Subpart X*. The 1-hour standard was revoked effective June 15, 2005.

- (a) **Ozone Standards**
Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to ozone. Vanderburgh County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (b) St. Joseph County has been classified as attainment for PM_{2.5}. On May 8, 2008, U.S. EPA promulgated the requirements for Prevention of Significant Deterioration (PSD) for PM_{2.5} emissions. These rules became effective on July 15, 2008. On May 4, 2011, the air pollution control board issued an emergency rule establishing the direct PM_{2.5} significant level at ten (10) tons per year. This rule became effective, June 28, 2011. Therefore, direct PM_{2.5}, SO₂, and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability – Entire Source section.

(c) Other Criteria Pollutants

St. Joseph County has been classified as attainment or unclassifiable in Indiana for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

Fugitive Emissions

The fugitive emissions of criteria pollutants, hazardous air pollutants, and greenhouse gases are counted toward the determination of 326 IAC 2-1.1-3 (Exemptions) applicability.

Background and Description of Emission Units and Pollution Control Equipment

The Office of Air Quality (OAQ) has reviewed an application, submitted by Directors Crematory, LLC on May 14, 2014, relating to the construction and operation of one (1) stationary human crematory incinerator and one (1) stationary pet crematory incinerator.

The source consists of the following new emission units:

- (a) One (1) human crematory, identified as 00147-H-13, with a maximum operating capacity of 150 pounds per hour (lbs/hr), using natural gas as a supplemental fuel at a maximum heat input capacity of 3.0 million Btu per hour (MMBtu/hr), using no control, and exhausting to stack 00147-H-13;
- (b) One (1) pet crematory, identified as 00150-P-13, with a maximum operating capacity of 100 pounds per hour (lbs/hr), using natural gas as a supplemental fuel at a maximum heat input capacity of 3.0 million Btu per hour (MMBtu/hr), using no control, and exhausting to stack 00150-P-13; and
- (c) Paved roads and parking lots. [326 IAC 6-4]

Enforcement Issues

There are no pending enforcement actions related to this source.

Emission Calculations

See Appendix A of this TSD for detailed emission calculations.

Permit Level Determination – Exemption

The following table reflects the unlimited potential to emit (PTE) of the entire source before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Process/ Emission Unit	Potential To Emit of the Entire Source (tons/year)									
	PM	PM ₁₀ [*]	PM _{2.5} [*]	SO ₂	NO _x	VOC	CO	GHGs as CO ₂ e ^{**}	Total HAPs	Worst Single HAP
Human crematory incinerator	2.30	2.30	2.30	0.82	0.99	0.99	3.29	668.4	2.38	2.29 (HCl)
Pet crematory incinerator	1.53	1.53	1.53	0.55	0.66	0.66	2.19	445.6	1.59	1.53 (HCl)
Natural Gas Combustion	0.05	0.20	0.20	0.015	2.58	0.14	2.16	3110.1	0.012	0.010 (hexane)
Fugitive Emissions	0.20	0.04	0.01	-	-	-	-	-	-	-
Total PTE of Entire Source	4.08	4.07	4.04	1.38	4.22	1.78	7.64	4,224	<25	<10 (HCl)

Process/ Emission Unit	Potential To Emit of the Entire Source (tons/year)									
	PM	PM ₁₀ *	PM _{2.5} *	SO ₂	NO _x	VOC	CO	GHGs as CO ₂ e**	Total HAPs	Worst Single HAP
Exemptions Levels**	< 5	< 5	< 5	< 10	< 10	< 10	< 25	< 100,000	< 25	< 10

negl. = negligible; "-" denotes emission unit does not emit the designated pollutant.
 HCl = hydrogen chloride
 *Under the Part 70 Permit program (40 CFR 70), PM₁₀ and PM_{2.5}, not particulate matter (PM), are each considered as a regulated air pollutant".
 **The 100,000 CO₂e threshold represents the Title V and PSD subject-to-regulation thresholds for GHGs in order to determine whether a source's emissions are a regulated NSR pollutant under Title V and PSD.

- (a) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) of all regulated criteria pollutants are less than the levels listed in 326 IAC 2-1.1-3(e)(1). Therefore, the source is subject to the provisions of 326 IAC 2-1.1-3 (Exemptions).
- (b) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) of any single HAP is less than ten (10) tons per year and the PTE of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-7.
- (c) The potential to emit (PTE) (as defined in 326 IAC 2-1.1-1) greenhouse gases (GHG) is less than the Title V subject-to-regulation threshold of one hundred thousand (100,000) tons of CO₂ equivalent (CO₂e) emissions per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.

Federal Rule Applicability Determination

New Source Performance Standards (NSPS)

- (a) The requirements of the New Source Performance Standards for Hospital/Medical/Infectious Waste Incinerators, 40 CFR 60.50, Subpart Ec (326 IAC 12), are not included in this exemption because the crematory incinerators are not Hospital/Medical/Infectious Waste Incinerators as defined by 40 CFR 60.51c. Pursuant to the definitions under 40 CFR 60.51c, "hospital waste" and "medical/infectious waste" do not include remains that are intended for cremation.
- (b) The requirements of the following New Source Performance Standards (NSPS) are not included in this exemption because the crematory incinerators are not considered a Municipal Waste Combustors and do not burn municipal type waste:
 - (1) 40 CFR 60, Subpart E (60.50 through 60.54), Standards of Performance for Standards of Performance for Incinerators (326 IAC 12);
 - (2) 40 CFR 60, Subpart Ea (60.50a through 60.59a), Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced after December 20, 1989 and on or before September 20, 1994 (326 IAC 12);
 - (3) 40 CFR 60, Subpart Eb (60.50b through 60.59b), Standards of Performance for Large Municipal Waste Combustors for Which Construction is Commenced after September 20, 1994, or for Which Modification or Reconstruction is commenced after June 19, 1996 (326 IAC 12);
 - (4) 40 CFR 60, Subpart AAAA (60.1000 through 60.1465), Standards of Performance for Small Municipal Waste Combustion Units for Which Construction is Commenced After August 30, 1999 or for Which Modification or Reconstruction is Commenced After June 6, 2001 (326 IAC 12).

(c) The requirements of the New Source Performance Standard (NSPS) for Commercial and Industrial Solid Waste Incinerations Units for Which Construction is Commenced After November 30, 1999 or for Which Modification or Reconstruction is Commenced on or After June 1, 2001, 40 CFR 60, Subpart CCCC (60.2000 through 60.2265) (326 IAC 12), are not included in this exemption because the crematory incinerators are not considered Commercial and Industrial Solid Waste Incineration (CISWI) Units as defined 40 CFR 60.2265. Pursuant to the definitions under 40 CFR 60.2265, a CISWI unit does not include any of the fifteen types of units described in 40 CFR 60.2555. Pursuant to 40 CFR 60.2555(a), incineration units burning 90 percent or more by weight (on a calendar quarter basis and excluding the weight of auxiliary fuel and combustion air) of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste as defined in 40 CFR 60.2875 are not subject to this subpart if the unit meets the two requirements specified in paragraphs (a)(1) and (2) of this section.

- (1) Notify the Administrator that the unit meets these criteria.
- (2) Keep records on a calendar quarter basis of the weight of pathological waste, low-level radioactive waste, and/or chemotherapeutic waste burned, and the weight of all other fuels and wastes burned in the unit.

Pursuant to 40 CFR 60.2555(a)(1) and 40 CFR 60.2555(a)(2), in order to demonstrate that each of the crematory incinerators is not subject to the requirements of the New Source Performance Standard (NSPS) for Commercial and Industrial Solid Waste Incinerations Units for Which Construction is Commenced After November 30, 1999 or for Which Modification or Reconstruction is Commenced on or After June 1, 2001, 40 CFR 60, Subpart CCCC (326 IAC 12), the Permittee shall comply with the following:

- (1) The Permittee shall notify the IDEM, OAQ that each crematory incinerator burns 90% or more by weight of pathological waste, excluding the weight of the auxiliary fuel and combustion air. The Permittee shall submit the notification to:

Indiana Department of Environmental Management
Compliance and Enforcement Branch, Office of Air Quality
100 North Senate Avenue
MC 61-53 IGCN 1003
Indianapolis, Indiana 46204-2251

- (2) The Permittee shall maintain records on a calendar quarter basis of the weight of pathological waste burned (excluding the weight of auxiliary fuel and combustion air) and the weight of all other fuels and wastes burned each crematory incinerator.
- (3) Pursuant to 40 CFR 60.2875, pathological waste means waste material consisting of only human or animal remains, anatomical parts, and/or tissue, the bags/containers used to collect and transport the waste material, and animal bedding (if applicable).
- (4) All records shall be retained for a period of at least five (5) years from the date of the measurement. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(d) The requirements of the New Source Performance Standards for Other Solid Waste Incineration Units for Which Construction is Commenced After December 9, 2004 or for Which Modification or Reconstruction is commenced on or After June 16, 2006, 40 CFR 60, Subpart EEEE (60.2280 through 60, 2891), are not included in this exemption, because the crematory incinerators are not considered Other Solid Waste Incineration (OSWI) unit as defined by 40 CFR 60.2977. The crematory incinerator does not burn municipal solid waste or institutional waste as defined in 40 CFR 60.2977.

- (e) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) included in the exemption for this source.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

- (f) The requirements of the National Emission Standards for Hazardous Waste Combustors, 40 CFR 63, Subpart EEE (63.1200 through 63.1214) (326 IAC 20-28), are not included in this exemption, because the crematory incinerators are not considered hazardous waste incinerators and the source is not a major source of HAPs.
- (g) The requirements of the National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD, are not included in this exemption, because this source is not a major source of HAPs as defined in 40 CFR 63.2 and does not contain any boilers or process heaters.
- (h) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers Area Sources, 40 CFR 63, Subpart JJJJJJ, are not included in included in this exemption, because this source does not contain any boilers.
- (i) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP) (326 IAC 14, 20 and 40 CFR Part 61, 63) included in the exemption for this source.

Compliance Assurance Monitoring (CAM)

- (g) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is not included in this exemption, because the unlimited potential to emit of the source is less than the Title V major source thresholds and the source is not required to obtain a Part 70 or Part 71 permit.

State Rule Applicability Determination

326 IAC 2-1.1-3 (Exemptions)

Exemption applicability is discussed under the Permit Level Determination – Exemption section above.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The potential to emit of any single HAP is less than ten (10) tons per year and the potential to emit of a combination of HAPs is less than twenty-five (25) tons per year. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA) and not subject to the provisions of 326 IAC 2-4.1.

326 IAC 2-6 (Emission Reporting)

Pursuant to 326 IAC 2-6-1, this source is not subject to this rule, because it is not required to have an operating permit under 326 IAC 2-7 (Part 70), it is not located in Lake, Porter, or LaPorte County, and it does not emit lead into the ambient air at levels equal to or greater than five (5) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-4 (Fugitive Dust Emissions Limitations)

Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions Limitations), the source shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4.

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)

The source is not subject to the requirements of 326 IAC 6-5, because the source does not have potential fugitive particulate emissions greater than twenty-five (25) tons per year. Therefore, 326 IAC 6-5 does not apply.

326 IAC 6.8-10 (Lake County: Fugitive Particulate Matter)

The source is not subject to the requirements of 326 IAC 6.8-10, because it is not located in Lake County and it does not have potential fugitive particulate emissions greater than five (5) tons per year.

State Rule Applicability Determination - Individual Facilities

Crematory Incinerators

326 IAC 4-2 (Incinerators)

Pursuant to 326 IAC 4-2-2 (Incinerators), the Permittee shall comply with the following:

- (a) All incinerators shall comply with the following requirements:
 - (1) Consist of primary and secondary chambers or the equivalent.
 - (2) Be equipped with a primary burner unless burning only wood products.
 - (3) Comply with 326 IAC 5-1 (Opacity Limitations) and 326 IAC 2 (Permit Review Rules).
 - (4) Be maintained, operated, and burn waste in accordance with the manufacturer's specifications or an operation and maintenance plan as specified in subsection (c).
 - (5) Not emit particulate matter in excess of one (1) of the following:
 - (A) Three-tenths (0.3) pound of particulate matter per one thousand (1,000) pounds of dry exhaust gas under standard conditions corrected to fifty percent (50%) excess air for incinerators with a maximum solid waste capacity of greater than or equal to two hundred (200) pounds per hour.
 - (B) Five-tenths (0.5) pound of particulate matter per one thousand (1,000) pounds of dry exhaust gas under standard conditions corrected to fifty percent (50%) excess air for incinerators with solid waste capacity less than two hundred (200) pounds per hour.
 - (6) If any of the requirements of subdivisions (1) through (5) are not met, then the owner or operator shall stop charging the incinerator until adjustments are made that address the underlying cause of the deviation.
- (b) An incinerator is exempt from subsection (a)(5) if subject to a more stringent particulate matter emission limit in 40 CFR 52 Subpart P, State Implementation Plan for Indiana.
- (c) An owner or operator developing an operation and maintenance plan pursuant to subsection (a)(4) must comply with the following:
 - (1) The operation and maintenance plan must be designed to meet the particulate matter emission limitation specified in subsection (a)(5) and include the following:

- (A) Procedures for receiving, handling, and charging waste.
 - (B) Procedures for incinerator startup and shutdown.
 - (C) Procedures for responding to a malfunction.
 - (D) Procedures for maintaining proper combustion air supply levels.
 - (E) Procedures for operating the incinerator and associated air pollution control systems.
 - (F) Procedures for handling ash.
 - (G) A list of wastes that can be burned in the incinerator.
- (2) Each incinerator operator shall review the plan before initial implementation of the operation and maintenance plan and annually thereafter.
 - (3) The operation and maintenance plan must be readily accessible to incinerator operators.
 - (4) The owner or operator of the incinerator shall notify the department, in writing, thirty (30) days after the operation and maintenance plan is initially developed pursuant to this section.
- (d) The owner or operator of the incinerator must make the manufacturer's specifications or the operation and maintenance plan available to the department upon request.

326 IAC 6-2 (Particulate Emission Limitations for Sources of Indirect Heating)

The crematory incinerators are not subject to the requirements of 326 IAC 6-2, because an incinerator is not an indirect heating unit.

326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-1(b)(2), the crematory incinerators are exempt from the requirements of 326 IAC 6-3.

326 IAC 7-1 (Sulfur dioxide emission limitations: Applicability)

The crematory incinerators are not subject to the requirements of 326 IAC 7-1, because the potential and the actual emissions of sulfur dioxide are less than twenty-five (25) tons per year and ten (10) pounds per hour respectively.

326 IAC 8-1-6 (VOC rules: General Reduction Requirements for New Facilities)

The crematory incinerators are not subject to the requirements of 326 IAC 8-1-6, since each incinerator has unlimited VOC potential emissions of less than twenty-five (25) tons per year.

326 IAC 8-7 (VOC Rules: Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)

Pursuant to 326 IAC 8-7-2(a), this source is not subject to the requirements of 326 IAC 8-7, since it is not located in Lake, Porter, Clark, or Floyd County.

326 IAC 8-19 (VOC Rules: Control of Volatile Organic Compound Emissions from Process Vents in Batch Operations)

Pursuant to 326 IAC 8-19-1, this source is not subject to the requirements of 326 IAC 8-19, since it is not located in Lake or Porter County and does not have the potential to emit VOC greater than or equal to one hundred (100) tons per year from a batch process train associated with any of the SIC Codes listed under 326 IAC 8-19-1(a).

326 IAC 9-1 (Carbon Monoxide Emission Limits)

This stationary source, constructed after the applicability date of March 21, 1972, is not subject to the requirements of 326 IAC 9-1-2(a)(3), since the crematory incinerators burn pathological waste and do not burn refuse consisting of more than 50 percent (50%) municipal type waste (household, commercial/retail, and/or institutional waste).

326 IAC 10-1-1 (Nitrogen Oxides Control)

The crematory incinerators are not subject to the requirements of 326 IAC 10-1-1 (Nitrogen Oxides Control), because the source is not located in Clark or Floyd counties.

326 IAC 11-6 (Hospital/Medical/Infectious Waste Incinerators)

Pursuant to 326 IAC 11-6, the crematory incinerators are not subject to the requirements of 326 IAC 11-6, because the incinerators are not a hospital/medical/infectious waste incinerator, and they were not constructed on or before June 20, 1996.

326 IAC 11-7 (Emission Limitations for Municipal Waste Combustors)

Pursuant to 326 IAC 11-7, the crematory incinerators are not subject to the requirements of 326 IAC 11-7, since they are considered a pathological waste combustor and not a municipal waste combustor, and it does not burn municipal type waste.

326 IAC 11-8 (Commercial and Industrial Solid Waste Incineration Units)

Pursuant to 326 IAC 11-8, the crematory incinerators are not subject to the requirements of 326 IAC 11-8, because they are not considered a commercial and industrial solid waste incineration (CISWI) unit as defined by 40 CFR 60.2875.

Conclusion and Recommendation

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant. An application for the purposes of this review was received on May 14, 2014.

The construction and operation of this source shall be subject to the conditions of the attached proposed Exemption No. E141-34541-00588. The staff recommends to the Commissioner that this Exemption be approved.

IDEM Contact

- (a) Questions regarding this proposed permit can be directed to Donald McQuigg at the Indiana Department Environmental Management, Office of Air Quality, Permits Branch, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana 46204-2251 or by telephone at (317) 234-4240 or toll free at 1-800-451-6027 extension 4-4240.
- (b) A copy of the findings is available on the Internet at: <http://www.in.gov/ai/appfiles/idem-caats/>
- (c) For additional information about air permits and how the public and interested parties can participate, refer to the IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.in.gov/idem

Appendix A: Emission Calculations Emissions Summary

Company Name: Directors Crematory, LLC
Source Address: 1731 South Franklin Street, South Bend, IN 46613
Exemption No.: E141-34541-00588
Reviewer: Donald McQuigg
Date: April 22, 2014

Process/Emission Unit	Uncontrolled Potential To Emit (tons/yr)									
	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	VOC	CO	GHG as CO ₂ e	HAPS	Single HAP
Human Crematory Incinerator	2.30	2.30	2.30	0.82	0.99	0.99	3.29	668.4	2.38	2.29 (hydrogen chloride)
Pet Crematory Incinerator	1.53	1.53	1.53	0.55	0.66	0.66	2.19	445.6	1.59	1.53 (hydrogen chloride)
Natural gas combustion	0.049	0.20	0.20	0.015	2.58	0.14	2.16	3110.1	0.0122	0.0116 (hexane)
Fugitive dust*	0.195	0.04	0.01	-	-	-	-	-	-	-
Total	4.08	4.07	4.04	1.38	4.22	1.78	7.64	4,224	<25	<10 (hydrogen chloride)

* mitigated fugitive PTE

**Appendix A: Emission Calculations
Human Crematory Incinerator (IE43-PPI)**

Company Name: Directors Crematory, LLC
Source Address: 1731 South Franklin Street, South Bend, IN 46613
Exemption No.: E141-34541-00588
Reviewer: Donald McQuigg
Date: April 22, 2014

To estimate the potential to emit for the incineration of human or animal remains, it is assumed that emissions from a crematory incinerator is similar to emissions from combusting refuse in a multiple chamber commercial incinerator.

Unit	Potential Throughput (lbs/hr)	Potential Throughput (tons/yr)
IE43-PPI	150	657
Total	150	657

Criteria Pollutants

Pollutant	PM	PM ₁₀ **	PM _{2.5} **	SO ₂	NOx	VOC	CO
Emission Factor in lb/ton*	7.0	7.0	7.0	2.5	3.0	3.0	10.0
Potential Emissions in ton/yr	2.30	2.30	2.30	0.82	0.99	0.99	3.29

Hazardous Air Pollutants (HAPs)

Pollutant	As	Cd	Cr	Hg	Ni	Pb	HCl	CDD/CDF
Emission Factor in lb/ton***	5.94E-03	1.09E-02	1.40E-02	5.60E-03	1.81E-02	2.13E-01	6.97E+00	7.25E-05
Potential Emissions in ton/yr	0.002	0.004	0.005	0.002	0.006	0.07	2.29	2.4E-05

Potential to Emit Total HAPs (tons/year) 2.38

Methodology

Potential Throughput (tons/yr) = [Potential Throughput (lbs/hr)] * [8,760 hrs/yr] * [ton/2000 lbs]
 Potential to Emit (tons/yr) = [Potential Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2,000 lbs]
 *Emission factors are from AP 42 for Refuse Combustion (5th Edition 10/96) Table 2.1-12 (Uncontrolled emission factors for industrial/commercial refuse combustors, multiple chamber)
 Note: There are no AP 42 emission factors for incineration of human or animal remains. Therefore, it is assumed that emissions from a crematory incinerator is similar to emissions from combusting refuse in a multiple chamber commercial incinerator.
 **No emission factor for PM₁₀ and PM_{2.5} available (assume PM = PM₁₀= PM_{2.5})
 ***There are no hazardous air pollutant (HAP) emission factors for refuse combustors in AP 42 Table 2.1-12. Therefore, the potential to emit (PTE) of HAPs was conservatively estimated using the worst case emission factors for all listed HAPs from AP 42 Tables 2.1-1 through 2.1-9.

Greenhouse Gases

Greenhouse Gas	CO ₂	CH ₄	N ₂ O
Emission Factor (kg/MMBtu)*	90.7	3.20E-02	4.20E-03
High Heat Value (MMBtu/ton)**	9.95	9.95	9.95
Emission Factor (lb/ton)	1989.6	0.70	0.09
Potential to Emit (tons/yr)	653.58	0.23	0.03
Summed Potential Emissions in tons/yr	653.84		
CO ₂ e Total in tons/yr	668.36		

Methodology

*Under AP 42 Chapter 1.2 Refuse Combustion (5th Edition 10/96), there are no emission factors for CH₄ and N₂O and the emission factor for CO₂ in AP 42 Table 2.1-9 (Modular Starved-Air Combustors) is less than the emission factor calculated from Table C-1 of 40 CFR Part 98, Subpart C (for Municipal Solid Waste). Therefore, CO₂, CH₄, and N₂O emission factors are from Table C-1 and Table C-2, 40 CFR Part 98, Subpart C (for Municipal Solid Waste). In addition, there are no emission factors in 40 CFR Part 98, Subpart C for combustion of human or animal remains. Therefore, it is assumed that CO₂, CH₄, and N₂O emissions from incineration of human or animal remains are similar to CO₂, CH₄, and N₂O emissions from combustion of municipal solid waste.
 **The High Heat Value (HHV) corresponds to municipal solid waste.
 Greenhouse Warming Potential (GWP) is from Table A-1 of 40 CFR Part 98 Subpart A.
 Emission Factor (lb/ton) = [Emission Factor (kg/MMBtu)] * [2.2046 lb/kg] * [High Heat Value (MMBtu/ton)]
 Potential to Emit (tons/yr) = [Potential Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2,000 lbs]
 CO₂e (tons/yr) = CO₂ Potential Emission ton/yr x CO₂ GWP (1) + CH₄ Potential Emission ton/yr x CH₄ GWP (25) + N₂O Potential Emission ton/yr x N₂O GWP (298).

Abbreviations

PM = Particulate Matter	As = Arsenic	CO ₂ = Carbon Dioxide
PM ₁₀ = Particulate Matter (<10 um)	Cd = Cadmium	CH ₄ = Methane
PM _{2.5} = Particulate Matter (<2.5 um)	Cr = Chromium	N ₂ O = Nitrous Oxide
SO ₂ = Sulfur Dioxide	Hg = Mercury	CO ₂ e = CO ₂ equivalent emissions
NOx = Nitrous Oxides	Ni = Nickel	
VOC = Volatile Organic Compounds	Pb = Lead	
CO = Carbon Monoxide	HCl = hydrogen chloride	
CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans		

**Appendix A: Emission Calculations
Pet Crematory Incinerator (IE43-PPI)**

Company Name: Directors Crematory, LLC
Source Address: 1731 South Franklin Street, South Bend, IN 46613
Exemption No.: E141-34541-00588
Reviewer: Donald McQuigg
Date: April 22, 2014

To estimate the potential to emit for the incineration of human or animal remains, it is assumed that emissions from a crematory incinerator is similar to emissions from combusting refuse in a multiple chamber commercial incinerator.

Unit	Potential Throughput (lbs/hr)	Potential Throughput (tons/yr)
IE43-PPI	100	438
Total	100	438

Criteria Pollutants

Pollutant	PM	PM ₁₀ **	PM _{2.5} **	SO ₂	NOx	VOC	CO
Emission Factor in lb/ton*	7.0	7.0	7.0	2.5	3.0	3.0	10.0
Potential Emissions in ton/yr	1.53	1.53	1.53	0.55	0.66	0.66	2.19

Hazardous Air Pollutants (HAPs)

Pollutant	As	Cd	Cr	Hg	Ni	Pb	HCl	CDD/CDF
Emission Factor in lb/ton***	5.94E-03	1.09E-02	1.40E-02	5.60E-03	1.81E-02	2.13E-01	6.97E+00	7.25E-05
Potential Emissions in ton/yr	0.001	0.002	0.003	0.001	0.004	0.05	1.53	1.6E-05

Potential to Emit Total HAPs (tons/year) **1.59**

Methodology

Potential Throughput (tons/yr) = [Potential Throughput (lbs/hr)] * [8,760 hrs/yr] * [ton/2000 lbs]
 Potential to Emit (tons/yr) = [Potential Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2,000 lbs]
 *Emission factors are from AP 42 for Refuse Combustion (5th Edition 10/96) Table 2.1-12 (Uncontrolled emission factors for industrial/commercial refuse combustors, multiple chamber)

Note: There are no AP 42 emission factors for incineration of human or animal remains. Therefore, it is assumed that emissions from a crematory incinerator is similar to emissions from combusting refuse in a multiple chamber commercial incinerator.

**No emission factor for PM₁₀ and PM_{2.5} available (assume PM = PM₁₀= PM_{2.5})

***There are no hazardous air pollutant (HAP) emission factors for refuse combustors in AP 42 Table 2.1-12. Therefore, the potential to emit (PTE) of HAPs was conservatively estimated using the worst case emission factors for all listed HAPs from AP 42 Tables 2.1-1 through 2.1-9.

Greenhouse Gases

Greenhouse Gas	CO ₂	CH ₄	N ₂ O
Emission Factor (kg/MMBtu)*	90.7	3.20E-02	4.20E-03
High Heat Value (MMBtu/ton)**	9.95	9.95	9.95
Emission Factor (lb/ton)	1989.6	0.70	0.09
Potential to Emit (tons/yr)	435.72	0.15	0.02
Summed Potential Emissions in tons/yr	435.89		
CO ₂ e Total in tons/yr	445.57		

Methodology

*Under AP 42 Chapter 1.2 Refuse Combustion (5th Edition 10/96), there are no emission factors for CH₄ and N₂O and the emission factor for CO₂ in AP 42 Table 2.1-9 (Modular Starved-Air Combustors) is less than the emission factor calculated from Table C-1 of 40 CFR Part 98, Subpart C (for Municipal Solid Waste). Therefore, CO₂, CH₄, and N₂O emission factors are from Table C-1 and Table C-2, 40 CFR Part 98, Subpart C (for Municipal Solid Waste). In addition, there are no emission factors in 40 CFR Part 98, Subpart C for combustion of human or animal remains. Therefore, it is assumed that CO₂, CH₄, and N₂O emissions from incineration of human or animal remains are similar to CO₂, CH₄, and N₂O emissions from combustion of municipal solid waste.

**The High Heat Value (HHV) corresponds to municipal solid waste.

Greenhouse Warming Potential (GWP) is from Table A-1 of 40 CFR Part 98 Subpart A.

Emission Factor (lb/ton) = [Emission Factor (kg/MMBtu)] * [2.2046 lb/kg] * [High Heat Value (MMBtu/ton)]

Potential to Emit (tons/yr) = [Potential Throughput (tons/yr)] * [Emission Factor (lb/ton)] * [ton/2,000 lbs]

CO₂e (tons/yr) = CO₂ Potential Emission ton/yr x CO₂ GWP (1) + CH₄ Potential Emission ton/yr x CH₄ GWP (25) + N₂O Potential Emission ton/yr x N₂O GWP (298).

Abbreviations

PM = Particulate Matter	As = Arsenic	CO ₂ = Carbon Dioxide
PM ₁₀ = Particulate Matter (<10 um)	Cd = Cadmium	CH ₄ = Methane
PM _{2.5} = Particulate Matter (<2.5 um)	Cr = Chromium	N ₂ O = Nitrous Oxide
SO ₂ = Sulfur Dioxide	Hg = Mercury	CO ₂ e = CO ₂ equivalent emissions
NOx = Nitrous Oxides	Ni = Nickel	
VOC = Volatile Organic Compounds	Pb = Lead	
CO = Carbon Monoxide	HCl = hydrogen chloride	
CDD/CDF = total tetra- through octa- chlorinated dibenzo-p-dioxin/chlorinated dibenzofurans, 2,3,7,8-tetrachlorodibenzo-p-dioxin, and dibenzofurans		

**Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100**

Company Name: Directors Crematory, LLC
Source Address: 1731 South Franklin Street, South Bend, IN 46613
Exemption No.: E141-34541-00588
Reviewer: Donald McQuigg
Date: April 22, 2014

Heat Input Capacity MMBtu/hr	HHV mmBtu mmscf	Potential Throughput MMCF/yr	Emission Unit ID	MMBtu/hr Rating
6.0	1020	51.5	00147-H-13	3.0
			00150-P-13	3.0
			Total =	6.0

Emission Factor in lb/MMCF	Pollutant						
	PM*	PM10*	direct PM2.5*	SO2	NOx	VOC	CO
	1.9	7.6	7.6	0.6	100 **see below	5.5	84
Potential Emission in tons/yr	0.049	0.196	0.196	0.015	2.576	0.142	2.164

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

PM2.5 emission factor is filterable and condensable PM2.5 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

HAPS Calculations

Emission Factor in lb/MMcf	HAPs - Organics					
	Benzene	Dichlorobenzene	Formaldehyde	Hexane	Toluene	Total - Organics
	2.1E-03	1.2E-03	7.5E-02	1.8E+00	3.4E-03	
Potential Emission in tons/yr	5.411E-05	3.092E-05	1.932E-03	4.638E-02	8.760E-05	4.848E-02

Emission Factor in lb/MMcf	HAPs - Metals					
	Lead	Cadmium	Chromium	Manganese	Nickel	Total - Metals
	5.0E-04	1.1E-03	1.4E-03	3.8E-04	2.1E-03	
Potential Emission in tons/yr	1.288E-05	2.834E-05	3.607E-05	9.791E-06	5.411E-05	1.412E-04
					Total HAPs =	4.862E-02
					Worst HAP =	4.638E-02

Methodology is the same as above.

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Greenhouse Gas Calculations

Emission Factor in lb/MMcf	Greenhouse Gas		
	CO2	CH4	N2O
	120,000	2.3	2.2
Potential Emission in tons/yr	3,092	0.06	0.06
Summed Potential Emissions in tons/yr	3,092		
CO2e Total in tons/yr	3,110		

Methodology

The N2O Emission Factor for uncontrolled is 2.2. The N2O Emission Factor for low Nox burner is 0.64.

Emission Factors are from AP 42, Table 1.4-2 SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03.

Global Warming Potential (GWP) is from Table A-1 of 40 CFR Part 98 Subpart A.

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

CO2e (tons/yr) = CO2 Potential Emission ton/yr x CO2 GWP (1) + CH4 Potential Emission ton/yr x CH4 GWP (25) + N2O Potential Emission ton/yr x N2O GWP (298).

**Appendix A: Emission Calculations
Fugitive Dust Emissions - Paved Roads**

Company Name: Directors Crematory, LLC
Source Address: 1731 South Franklin Street, South Bend, IN 46613
Exemption No.: E141-34541-00588
Reviewer: Donald McQuigg
Date: April 22, 2014

Paved Roads at Industrial Site

The following calculations determine the amount of emissions created by paved roads, based on 8,760 hours of use and AP-42, Ch 13.2.1 (1/2011).

Vehicle Information (provided by source)

Type	Maximum number of vehicles per day	Number of one-way trips per day per vehicle	Maximum trips per day (trip/day)	Maximum Weight Loaded (tons/trip)	Total Weight driven per day (ton/day)	Maximum one-way distance (feet/trip)	Maximum one-way distance (mi/trip)	Maximum one-way miles (miles/day)	Maximum one-way miles (miles/yr)
Vehicle 1 (entering) (one-way trip)	35.0	1.0	35.0	2.0	70.0	500	0.095	3.3	1209.8
Vehicle 1 (leaving) (one-way trip)	35.0	1.0	35.0	2.0	70.0	500	0.095	3.3	1209.8
Total			70.0		140.0			6.6	2419.5

Average Vehicle Weight Per Trip = $\frac{2.0}{1.0}$ tons/trip
 Average Miles Per Trip = $\frac{0.09}{1.0}$ miles/trip

Unmitigated Emission Factor, $E_f = [k * (sL)^{0.91} * (W)^{1.02}]$ (Equation 1 from AP-42 13.2.1)

	PM	PM10	PM2.5	
where k =	0.011	0.0022	0.00054	lb/VMT = particle size multiplier (AP-42 Table 13.2.1-1)
W =	2.0	2.0	2.0	tons = average vehicle weight (provided by source)
sL =	9.7	9.7	9.7	g/m ² = silt loading value for paved roads at iron and steel production facilities - Table 13.2.1-3)

Taking natural mitigation due to precipitation into consideration, Mitigated Emission Factor, $E_{ext} = E * [1 - (p/4N)]$ (Equation 2 from AP-42 13.2.1)

Mitigated Emission Factor, $E_{ext} = \frac{E_f * [1 - (p/4N)]}{1}$
 where p = 128 days of rain greater than or equal to 0.01 inches (see Fig. 13.2.1-2)
 N = 365 days per year

	PM	PM10	PM2.5	
Unmitigated Emission Factor, E_f =	0.176	0.035	0.0087	lb/mile
Mitigated Emission Factor, E_{ext} =	0.161	0.032	0.0079	lb/mile

Process	Unmitigated PTE of PM (tons/yr)	Unmitigated PTE of PM10 (tons/yr)	Unmitigated PTE of PM2.5 (tons/yr)	Mitigated PTE of PM (tons/yr)	Mitigated PTE of PM10 (tons/yr)	Mitigated PTE of PM2.5 (tons/yr)
Vehicle 1 (entering) (one-way trip)	0.107	0.021	0.005	0.097	0.019	0.005
Vehicle 1 (leaving) (one-way trip)	0.107	0.021	0.005	0.097	0.019	0.005
	0.21	0.04	0.01	0.195	0.04	0.01

Methodology

Total Weight driven per day (ton/day) = [Maximum Weight Loaded (tons/trip)] * [Maximum trips per day (trip/day)]
 Maximum one-way distance (mi/trip) = [Maximum one-way distance (feet/trip)] / [5280 ft/mile]
 Maximum one-way miles (miles/day) = [Maximum trips per year (trip/day)] * [Maximum one-way distance (mi/trip)]
 Average Vehicle Weight Per Trip (ton/trip) = SUM[Total Weight driven per day (ton/day)] / SUM[Maximum trips per day (trip/day)]
 Average Miles Per Trip (miles/trip) = SUM[Maximum one-way miles (miles/day)] / SUM[Maximum trips per year (trip/day)]
 Unmitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Unmitigated Emission Factor (lb/mile)] * (ton/2000 lbs)
 Mitigated PTE (tons/yr) = [Maximum one-way miles (miles/yr)] * [Mitigated Emission Factor (lb/mile)] * (ton/2000 lbs)
 Controlled PTE (tons/yr) = [Mitigated PTE (tons/yr)] * [1 - Dust Control Efficiency]

Abbreviations

PM = Particulate Matter
 PM10 = Particulate Matter (<10 um)
 PM2.5 = Particle Matter (<2.5 um)
 PTE = Potential to Emit



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

100 N. Senate Avenue • Indianapolis, IN 46204
(800) 451-6027 • (317) 232-8603 • www.idem.IN.gov

Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

SENT VIA U.S. MAIL: CONFIRMED DELIVERY AND SIGNATURE REQUESTED

TO: Patrick Nowack
Directors Crematory, LLC
1830 Kemble Avenue
South Bend, Indiana 46613

DATE: May 20, 2014

FROM: Matt Stuckey, Branch Chief
Permits Branch
Office of Air Quality

SUBJECT: Final Decision
Exemption
141-34541-00588

Enclosed is the final decision and supporting materials for the air permit application referenced above. Please note that this packet contains the original, signed, permit documents.

The final decision is being sent to you because our records indicate that you are the contact person for this application. However, if you are not the appropriate person within your company to receive this document, please forward it to the correct person.

A copy of the final decision and supporting materials has also been sent via standard mail to:
OAQ Permits Branch Interested Parties List

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178, or toll-free at 1-800-451-6027 (ext. 3-0178), and ask to speak to the permit reviewer who prepared the permit. If you think you have received this document in error, please contact Joanne Smiddie-Brush of my staff at 1-800-451-6027 (ext 3-0185), or via e-mail at jbrush@idem.IN.gov.

Final Applicant Cover letter.dot 6/13/2013

Mail Code 61-53

IDEM Staff	AWELLS 5/20/2014 Directors Crematory LLC 141-34541-00588 Final		Type of Mail: CERTIFICATE OF MAILING ONLY	AFFIX STAMP HERE IF USED AS CERTIFICATE OF MAILING
Name and address of Sender		Indiana Department of Environmental Management Office of Air Quality – Permits Branch 100 N. Senate Indianapolis, IN 46204		

Line	Article Number	Name, Address, Street and Post Office Address	Postage	Handing Charges	Act. Value (If Registered)	Insured Value	Due Send if COD	R.R. Fee	S.D. Fee	S.H. Fee	Rest. Del. Fee	Remarks
1		Patrick Nowack Directors Crematory LLC 1830 Kemble Avenue South Bend IN 46613 (Source CAATS) confirmed delivery										
2		Mr. Wayne Falda South Bend Tribune 255 W Colfax Ave South Bend IN 46626 (Affected Party)										
3		South Bend City Council / Mayors Office 227 W. Jefferson Blvd. South Bend IN 46601 (Local Official)										
4		St. Joseph County Board of Commissioners 227 West Jefferson Blvd, South Bend IN 46601 (Local Official)										
5		St. Joseph County Health Department 227 W Jefferson Blvd, Room 825 South Bend IN 46601-1870 (Health Department)										
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

Total number of pieces Listed by Sender	Total number of Pieces Received at Post Office	Postmaster, Per (Name of Receiving employee)	The full declaration of value is required on all domestic and international registered mail. The maximum indemnity payable for the reconstruction of nonnegotiable documents under Express Mail document reconstructing insurance is \$50,000 per piece subject to a limit of \$50, 000 per occurrence. The maximum indemnity payable on Express mil merchandise insurance is \$500. The maximum indemnity payable is \$25,000 for registered mail, sent with optional postal insurance. See Domestic Mail Manual R900, S913, and S921 for limitations of coverage on inured and COD mail. See International Mail Manual for limitations o coverage on international mail. Special handling charges apply only to Standard Mail (A) and Standard Mail (B) parcels.
4			